

INTER-OFFICE MEMORANDUM

TO: CHAIR AND MEMBERS DATE: 2017 September 12
PLANNING & DEVELOPMENT COMMITTEE

FROM: ADMINISTRATIVE OFFICER FILE: 2410-20

SUBJECT: ENVIRONMENTAL SUSTAINABILITY STRATEGY (ESS) AND
COMMUNITY ENERGY AND EMISSIONS PLAN (CEEP)
IMPLEMENTATION APPROACH AND PHASE 1 PRIORITIES
(ITEM 4(A), SCAC REPORT, COUNCIL 2017 SEPTEMBER 11)

Burnaby City Council, at the Open Council meeting held on 2017 September 11, received the above noted report and adopted the following recommendations contained therein:

1. THAT Council approve the implementation approach for the Environmental Sustainability Strategy and Community Energy and Emissions Plan, and Phase 1 policy priorities, as outlined in this report.
2. THAT a copy of this report be sent to the Planning and Development Committee, Financial Management Committee and Parks, Recreation and Culture Commission for their information.

As directed in recommendation #2, a copy of the report is attached for your information.



Nikolina Vracar
Administrative Officer

SUSTAINABLE CITY ADVISORY COMMITTEE

*HIS WORSHIP, THE MAYOR
AND COUNCILLORS*

**SUBJECT: ENVIRONMENTAL SUSTAINABILITY STRATEGY (ESS) AND
COMMUNITY ENERGY AND EMISSIONS PLAN (CEEP)
IMPLEMENTATION APPROACH AND PHASE 1 PRIORITIES**

RECOMMENDATIONS:

1. THAT Council approve the implementation approach for the Environmental Sustainability Strategy and Community Energy and Emissions Plan, and Phase 1 policy priorities, as outlined in this report.
2. THAT a copy of this report be sent to the Planning and Development Committee, Financial Management Committee and Parks, Recreation and Culture Commission for their information.

REPORT

The Sustainable City Advisory Committee, at its meeting held on 2017 September 06, received and adopted the attached report outlining an approach for implementation of the Environmental Sustainability Strategy and Community Energy and Emissions Plan.

Respectfully submitted,

Councillor S. Dhaliwal
Chair

Copied to:	City Manager Director Planning and Building Director Public Safety and Community Services Director Engineering Director Finance Director Parks, Recreation and Cultural Services Director Human Resources Chief Building Inspector Chief Information Officer Fire Chief Chief Librarian City Solicitor
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TO: CHAIR AND MEMBERS
SUSTAINABLE CITY ADVISORY COMMITTEE

DATE: 2017 August 9

FROM: DIRECTOR PLANNING AND BUILDING

FILE: 76500 20
Reference: ESS

SUBJECT: ENVIRONMENTAL SUSTAINABILITY STRATEGY (ESS) AND
COMMUNITY ENERGY AND EMISSIONS PLAN (CEEP)
IMPLEMENTATION APPROACH AND PHASE 1 PRIORITIES

PURPOSE: To outline an approach for implementation of the Environmental Sustainability Strategy and Community Energy and Emissions Plan.

RECOMMENDATIONS:

1. **THAT** Council approve the implementation approach for the Environmental Sustainability Strategy and Community Energy and Emissions Plan, and Phase 1 policy priorities, as outlined in this report.
2. **THAT** a copy of this report be sent to the Planning and Development Committee, Financial Management Committee and Parks, Recreation and Culture Commission for their information.

REPORT

1.0 INTRODUCTION

Burnaby's Environmental Sustainability Strategy (ESS) and Community Energy and Emissions Plan (CEEP) were approved by Council on 2016 November 7th. With that report, Council also authorized staff to develop an implementation plan, which would "identify timelines, priorities, lead responsibility, recommended processes and/or approaches, and resources required". This report responds to that commitment by outlining an approach to implementation, prioritizing among "Big Move" strategies, and identifying three highest-priority policy areas for initial work to support these strategies. Further detailed implementation work planning to address each of the three priority areas and future policies will be advanced for Council's consideration in subsequent reports.

1.1 Background

The ESS is a plan for Burnaby's "green" future. It will help to define how the city can evolve and build on its strengths to become an even more vibrant, resilient and sustainable community, integrated with healthy ecosystems. The CEEP was developed in support of the ESS, and is a plan with targets to reduce the community's overall energy use and greenhouse gas (GHG) emissions, in order to address climate change, improve local air quality, save money, and improve livability and

health. Together with the previously approved Economic and Social Sustainability Strategies, the ESS and CEEP define an integrated approach to achieve a healthy and sustainable city.

The overall vision guiding the ESS and CEEP is for Burnaby to be “*a global leader in protecting and regenerating ecosystems, supporting a healthy and prosperous community.*” This vision is supported by the ESS and CEEP goals and strategies.

The City has already made progress and demonstrated leadership in many aspects of sustainability contained in the ESS and CEEP, and this work will continue as a part of ongoing programs and initiatives.

In terms of focused new action, the ESS identifies 16 strategies as “Big Moves,” defined as key strategies necessary to achieve one or more of the ten ESS goals. Twenty-five “Quick Starts” are also identified, which are actions designed to initiate progress toward the Big Moves, build momentum and demonstrate commitment to action. The CEEP also includes Big Moves and Quick Starts that are shared with the ESS. This initial level of prioritization provides the foundation for more detailed work planning as outlined in this report.

The CEEP also includes targets for reducing community greenhouse gases (GHGs): a City-Only target of **5% below 2010 levels by 2041**, and a City-Plus-Others target of **30% below 2010 levels by 2041**¹. These targets will be included in the updated City’s Official Community Plan, as required by the provincial *Green Communities Act*.

1.2 Climate Action Charter

The City of Burnaby recently became a signatory of the provincial Climate Action Charter (CAC), a voluntary agreement that commits the City to make “progress toward carbon neutrality” by reducing its corporate GHG emissions, measuring and reporting on corporate and community emissions, and creating complete, compact and energy-efficient communities. This commitment further supports the ESS and CEEP direction for corporate leadership, one of the high-priority Big Move strategies identified in *Section 2*, and makes the City eligible for funding to support reducing community and corporate emissions as described in *Section 3.5.2*. The City’s actions in 2016 and 2017 for reducing corporate and community emissions, in the areas outlined in the CAC, are described in the Council Report dated 2017-06-12.

1.3 Purpose of Implementation Approach

The ESS and CEEP are intended to set clear direction as well as to provide flexibility to respond to changing circumstances and priorities. The ESS and CEEP have both broad and long-term scope and elements, and will require significant collaboration across departments and with external partners. Accordingly, implementation will be carried out through an iterative, adaptive management

¹ These dual targets recognize the limits of jurisdiction, and commit the City to the **City-Only** target (5% below 2010 levels) in areas over which it has direct control or significant influence, while also illustrating the potential reduction in GHGs that could be achieved with the support of others (**City Plus Others** target). It should be noted that the **City Only** target entails a substantial (~20%) reduction in GHGs in year 2041 compared to a scenario where no specific action is taken.

approach, as outlined in Section 7 of the ESS Report. This report outlines a preliminary approach including initial priorities and proposed Phase 1 areas of policy development in support of these priorities. Future specific new initiatives, resource requirements and proposed work programs, will be advanced for Council consideration as they are developed.

2.0 IMPLEMENTATION APPROACH

This section outlines the general approach proposed for implementation of the ESS and CEEP. It includes initial prioritization of “Big Moves”, a summary of recent and ongoing policy initiatives, methods for evaluation and improvement, and general approaches for collaboration.

2.1 Prioritization of ESS Strategies and Actions

As outlined in Section 1.1, the ESS and CEEP identify Big Moves and Quick Starts which serve as an initial level of prioritization. In order to focus efforts, additional prioritization is needed. The approach developed for this process emphasizes multiple benefits and synergies, including among the various ESS goals, between the ESS and CEEP, and with the Social Sustainability Strategy and Economic Development Strategy. This is consistent with Council’s direction for integrated sustainability and with the ESS Guiding Principles, as outlined in Section 5 of the ESS Report (see also *Appendix A*). As noted in *Appendix B*, the City has also made progress in some areas already.

The prioritization matrix for the Big Moves and their respective Quick Starts is shown in *Appendix C*. Accordingly, the following Big Moves were identified as the highest priority. See *Appendix D* for the full text of the strategies and supporting actions.

- 1) Reduce community greenhouse gas (GHG) emission rates, including in the areas of transportation, buildings, district energy and waste. **Breathe ESS 3.1.**
 - *E.g. Implement the strategies and actions of the CEEP.*
- 2) Improve resilience to climate change effects by assessing risks and seeking and acting on opportunities to protect the community and ecosystems from anticipated impacts. **Breathe ESS 3.2.**
 - *E.g. Develop a climate adaptation strategy.*
- 3) Transition to more efficient (including zero-emission) vehicles and more efficient use of vehicles. **Move ESS 5.6. / CEEP C2.5**
 - *E.g. Develop policy in support of electric vehicles / EV charging.*
- 4) Meet updated energy performance building code requirements for new buildings. **Build ESS 6.1. / CEEP C3.1**
 - *E.g. Review of development applications for BC Building Code compliance in energy by a certified energy professional. (Note, this may be combined with 6.2/C3.2.)*
- 5) Improve building design construction to meet higher standards of environmental performance. **Build ESS 6.2. / CEEP C3.2**
 - *E.g. Develop policy for green and energy efficient buildings.*

- 6) Demonstrate leadership in sustainability through City facility and operations management by reducing energy and GHG emissions, conserving water, reducing and diverting waste and enhancing ecosystems. **Manage ESS 10.3 / CEEP C5.1**
 - o E.g. Develop corporate sustainability policy and programs.

Action in five of the priorities can be initiated in Phase 1. The Strategy “Improve resilience to climate change effects by assessing risks and seeking and acting on opportunities to protect the community and ecosystems from anticipated impacts” is one that requires further consideration. Although the City is already undertaking a number of actions that support climate change adaptation, in order to fully achieve the Strategy, additional work is necessary beyond what is achievable in Phase 1.

2.2 Recent and Ongoing Initiatives

The ESS and CEEP were developed in recognition that the City has already taken action and leadership in a number of areas, and will continue to do so as a part of ongoing programs and complementary initiatives. Some examples of past successes in environmental sustainability across the City are provided in the discussion paper produced at the start of the ESS process in 2013, titled Burnaby’s Environmental Achievements². Additional recent initiatives are summarized in the Council Report dated 2016-06-12 regarding the Climate Action Charter. Furthermore, some progress has already been made on several Quick Starts since the ESS and CEEP were approved, as reported in *Appendix B*. The City will continue to take action across the goals of the ESS and CEEP as opportunities arise, and progress will be reported as outlined in this report.

2.3 Evaluation and Improvement

2.3.1 ESS/CEEP Indicators

The ESS is committed to evaluation and improvement (Guiding Principles #17 to 19 / *Appendix A*). Indicators, as described in Section 7 of the approved ESS, support these principles and are commonly used for sustainability planning, because they provide feedback, allow tracking of progress toward a goal, reporting on progress to staff, stakeholders and the public, and provide a basis for making changes to policies or programs if needed. Indicators may entail different levels of detail and rigor. For the purpose of the ESS and CEEP, a simple and pragmatic approach is envisioned, for indicators that are relevant, representative, and based on readily available data, among other attributes. Further investigation into the use of indicators, as well as other options or opportunities for evaluating progress on the ESS and CEEP, will be undertaken as work on implementation progresses.

2.3.2 Reporting on Implementation

In addition to reporting on indicators, ESS and CEEP implementation will track progress on specific actions and strategies. Overall results will be communicated to Council and be made available online to the public, in a reader-friendly and accessible format.

² Available at: www.burnaby.ca/ess-input

A simple annual report is proposed, in the form of a report to the Sustainable City Advisory Committee and Council, and would include an update on specific actions taken and progress made, as well as engagement and communication activities. These results would also be communicated to the public. Opportunities will be investigated to coordinate reporting on general ESS/CEEP implementation with reporting required for the Climate Action Charter as outlined in Section 1.2.

The opportunity to develop more comprehensive reports would also be explored, which may include more attention to graphic design for public interest, and would include more information about initiatives undertaken by community partners and citizens toward shared goals.

2.4 Collaboration, Engagement and Communication

The ESS and CEEP challenge all of us to take action – the City, our partner agencies, other levels of government, businesses, community organizations and individual citizens. The ESS Guiding Principles 13 through 16, under the headings of *Collaboration* and *Engagement*, commit to working together both internally and with external partners, and engaging the community (see *Appendix A*).

The ESS and CEEP both include strategies under the Manage goal (ESS 10.6 / CEEP C5.3) to develop and nurture community partnerships. Stakeholder engagement is envisioned as a means to continue to foster connections made during the ESS and CEEP development. Opportunities for stakeholder collaboration, engagement and communication during implementation are anticipated to include the following approaches:

- Existing regional committees coordinated by Metro Vancouver with City staff representation, focusing on topics including engineering, planning, environment and transportation;
- Existing inter-agency committees with City staff representation, focusing on topics such as watershed management, stormwater and invasive species;
- Ongoing partnership with the Burnaby Board of Trade, such as workshops with their Environmental Sustainability Committee;
- Presentations and workshops with students in relevant areas of study at Simon Fraser University and BC Institute of Technology, as well as exploring opportunities to support students engaged in relevant research and applied programs, as resources allow;
- Dialogue and collaboration with community groups, such as Streamkeepers; and
- Targeted communication to other key stakeholders focusing on specific areas and opportunities for partnership (e.g. Health Authority, BC Hydro, Fortis, Province, and the Urban Development Institute).

Public engagement is also an important factor for successful implementation of the ESS and CEEP, and one of the Big Move strategies under the Manage goal (ESS 10.2) commits to “explore innovative ways to engage the public on environmental issues”. To begin, public engagement and communication will take place through existing events. For example, during Environment Week 2017 citizens were invited to take the Green Pledge in support of ESS goals, as described in the Council report dated 2017 June 2. Other opportunities for public engagement will also be considered as new programs and policies are developed. This may include re-focusing current initiatives to better support and align with implementation of the ESS and CEEP and to take advantage of social media and other tools for effective public engagement and efficient use of City resources.

Collaboration, engagement and communication with Council and committees will be ongoing, with the Sustainable City Advisory Committee being a key committee in this regard.

3.0 PHASE 1 POLICY DEVELOPMENT

This section provides more details on the three proposed areas of policy work in Phase 1 implementation of the ESS and CEEP. Five Big Moves are proposed to be addressed in three main areas of policy work. These proposed policy areas are:

- **Green building policy for new development** (addressing Build ESS 6.1 / CEEP C3.1, Build ESS 6.2 / CEEP C3.2; and Breathe ESS 3.1);
- **Electric vehicle policy** (addressing Move ESS 5.6 / CEEP C2.5, and Breathe ESS 3.1);
- **Corporate sustainability** (addressing Manage ESS 10.3 / CEEP C5.1).

3.1 Green Building Policy

Improving the energy efficiency of buildings is an important objective since it can significantly affect the function, operating costs, health and comfort of buildings for many decades to come. Furthermore, just under half of Burnaby's greenhouse gas emissions come from buildings, representing an important area of focus to meet the City's climate targets in the CEEP, while sustainable building design can also respond to multiple goals of the ESS (e.g. water conservation, waste reduction), the SSS (e.g. health, comfort and affordability) and EDS (e.g. supporting growth of the green technology sector). The viability of energy efficient buildings has been well tested in Burnaby, with many individual examples and the pioneering work at the neighbourhood scale at UniverCity.

Recently the provincial government introduced the Energy Step Code (ESC), representing a framework that local governments can adopt to support building energy performance exceeding the minimum levels specified in the Building Code. It is intended to improve consistency across local governments and a "roadmap" for future Building Code updates, toward a goal of net zero energy ready buildings by 2032. The ESC was developed with input from various stakeholders, including local government, utilities and the development industry, and its implementation is being supported by the Province and BC Hydro through resources and funding. An approach for implementation of the ESC will be further evaluated in support of green building policy for the City, as noted in the CEEP (Build C3.1 and C3.2). Other aspects of green buildings, such as water conservation, ecosystem regeneration and waste reduction, would also be addressed in the policy.

Concurrent with the development of green building policy applicable to private development, policy direction will also be articulated for the City's own buildings, as a means to demonstrate leadership, explore the business case for highly efficient buildings and support industry transformation. Such policy would subsequently be included within broader corporate sustainability policy that will address a range of opportunities, as described below and as shown conceptually in *Figure 1*.

3.2 Electric Vehicle Policy

The interest in and demand for electric vehicles is rapidly increasing as technology costs are falling and vehicle range is improving. In addition to meeting consumer demand, supporting EV deployment

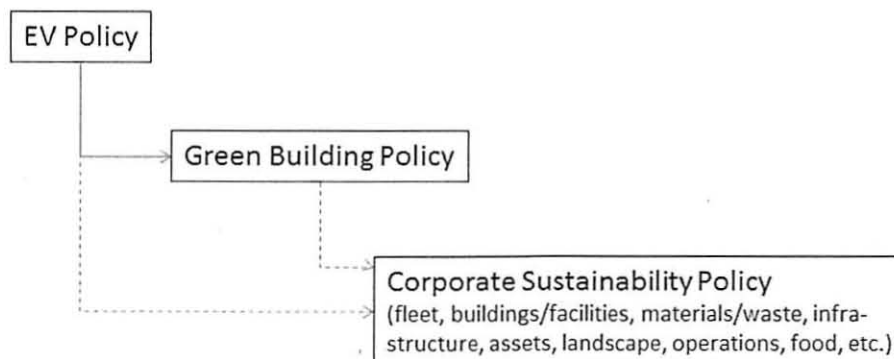
represents a significant opportunity to reduce air pollution and greenhouse gas emissions from vehicles. Emissions from transportation account for 50% of Burnaby's total community GHG emissions today, and of that, 82% is from personal automobiles. The lack of charging infrastructure is currently a key constraint to wider adoption of EVs, and local governments have a potentially important role to play in ensuring adequate supply of charging, such as within new developments and City facilities. Due to the strong relationship between EVs and buildings, with new development being the ideal time to install charging infrastructure, the proposed EV policy is proposed to be incorporated in the Green Building Policy.

Providing charging at publicly accessible City facilities would also support the broader EV network, therefore the EV policy would also provide guidance for provision of EV charging at existing and future facilities for public and staff, and opportunities for inclusion of EVs in City fleets. Such policy would form part of broader corporate sustainability policy, as shown conceptually in *Figure 1*.

3.3 Corporate Sustainability Policy

Policy for City of Burnaby corporate sustainability, i.e. focusing on the City's own operations, will address a range of objectives, including (as per the Big Move strategy ESS Manage 10.3) "reducing energy and GHG emissions, conserving water, reducing and diverting waste and enhancing ecosystems." The approach would build upon the City's existing programs and leadership in energy management, facilities development, and Green Team initiatives, to strengthen and develop strategic direction that also supports the GHG commitments of the Climate Action Charter as described in *Section 1.2*. As described in *Sections 3.1* and *3.2* above, policy for green buildings and EVs would be incorporated within the broader corporate policy, as shown conceptually in *Figure 1* below, which will also address other key components of the City's assets, infrastructure and operations, to be further outlined in a subsequent Council Report.

Figure 1: Conceptual relationship between the three proposed policy areas



3.4 Process for Policy Development

Each of the three proposed Phase 1 policy areas will be the subject of a future report to Council that includes details such as background, scope, process and timelines, and will identify needed resources and funding opportunities. The following principles will help to guide development of these policies:

- **Social Sustainability** – e.g. addresses considerations such as affordability, accessibility, health and wellness.
- **Economic Sustainability** – e.g. supports existing and future business and industry; supports business leadership in sustainability; addresses lifecycle costs and benefits.
- **Grounded in local context** – considers issues such as local climate, existing policy framework, types of development, community assets and demographics.
- **Flexibility** – allows for creativity and innovation; reduces barriers to innovation where feasible; emphasizes performance-based rather than prescriptive approaches.
- **Deliver real environmental benefits** – incorporates feasible and verifiable approaches.
- **Simple to administer and enforce** – minimizes resources required to implement.

3.5 Funding Opportunities

Other levels of government and other organizations engaged in policy and programs to support the environment have created programs and funding opportunities for local governments. Some general opportunities for external funding that may support these areas of work and related initiatives include those described below. Additional opportunities would continue to be sought as work progresses.

3.5.1 Utilities

Utilities such as BC Hydro and Fortis currently offer programs to assist municipalities with community and corporate energy management. The City of Burnaby has an existing partnership with BC Hydro, in the form of co-funding of a corporate energy manager position, a successful program that has assisted the City in making substantial improvements to building energy use and reducing costs of energy. BC Hydro offers similar types of funding of staff resources on the community energy management side (i.e. CEEP implementation) through their Sustainable Communities Program³, including funding for staff resources and specific projects such as development of building energy policy.

3.5.2 Provincial Government

The provincial Climate Action Revenue Incentive Program (CARIP)⁴ provides grants to municipalities that have signed the Climate Action Charter, equal to 100% of the carbon tax paid, in support of efforts to reduce their community and corporate emissions.

This source, and/or other provincial contributions that may be identified in future, could be directed to support resources required for general CEEP implementation, for policy work as outlined in this report, and/or for specific capital projects to reduce the City's GHG emissions.

3.5.3 Federal Government / Federation of Canadian Municipalities

The Federation of Canadian Municipalities (FCM)'s Climate Innovation Program⁵ offers funding for a variety of initiatives including plans and studies for reducing emissions and adapting to climate

³ BC Hydro Sustainable Communities Program

⁴ BC Government CARIP program

⁵ FCM Climate Innovation Program

To: Sustainable City Advisory Committee
From: Director Planning and Building
Re: ESS and CEEP Implementation Approach and Phase 1 Priorities
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change, capital projects, planning and staff support. This funding could support all three of the policy areas described in this report, for example, approaches for “greening” of the City’s vehicle fleet, feasibility of leading energy efficiency approaches for a new City facility, and installation of publicly accessible EV charging at City facilities. Other examples are provided in *Appendix E*.

These opportunities will be further considered to support current and future initiatives for ESS and CEEP implementation, and staff will monitor other federal programs and funding opportunities that may arise.

4.0 CONCLUSION

Council’s recent approval of the ESS and CEEP establishes the foundation for taking action toward the ESS vision of Burnaby becoming “a global leader in protecting and regenerating ecosystems, supporting a healthy and prosperous community.” These policies recognize the close relationship between environmental, social and economic sustainability and the multiple benefits that can be addressed in an integrated approach.

This vision for integrated sustainability is carried forward in the implementation approach proposed in this report. Strategies identified in the ESS and CEEP are prioritized according to their ability to support multiple ESS/CEEP goals, the Economic (EDS) and Social Sustainability Strategies (SSS), and address policy gaps, among other criteria.

In support of five high-priority Big Move Strategies, three key areas of policy development are proposed for Phase 1: Green Buildings, Electric Vehicles and Corporate Sustainability. Details and work planning for each of these proposed policy areas will be advanced for Council’s consideration in subsequent reports. Meanwhile, the City will continue to seek opportunities for action in support of other goals, strategies and suggested actions of the ESS and CEEP through ongoing programs and initiatives.


Lou Pelletier, Director
PLANNING AND BUILDING

LT:sla

Attachments

cc: City Manager
Director Public Safety and Community Services
Director Engineering
Director Finance
Director Parks, Recreation and Cultural Services
Director Human Resources

Chief Building Inspector
Chief Information Officer
Fire Chief
Chief Librarian
City Solicitor
City Clerk

APPENDIX A – GUIDING PRINCIPLES

Appendix F Guiding Principles

ESS GUIDING PRINCIPLES

Under the guidance of the ESS Steering Committee, Guiding Principles were developed to help steer the ESS. These Guiding Principles are intended to:

- be clear, concise, simple and action-oriented;
- apply to all actions;
- be separate from, and broader than, strategies, actions and other policy direction(s);
- help guide the project through to completion; and
- help communicate the City's values, and ensure a consistent approach in the development and implementation of the ESS.

Ecosystem Health

1. We recognize that we need healthy ecosystems for our survival, health and well-being¹, and that species and ecosystems also have intrinsic value (in their own right)².
2. We aim to "live off the interest" to ensure continued ecosystem health and resilience.
3. We undertake and encourage ecosystem based management³, protect the health of existing ecosystems, and actively enhance and restore degraded ecosystems.

Integration of Systems

4. We recognize that **economic** vitality, **environmental** health, **social** equity and **human health** are all interrelated and mutually dependent.

5. We seek synergies rather than trade-offs, and strive for solutions with multiple benefits.

Connections

6. We acknowledge that local actions can have far-reaching impacts.
7. We recognize that the well-being of our community is linked with the (ecological, social and economic) well-being of the region, the province, the nation and the world.

Wise Use of Resources

8. We proactively manage our resources by seeking creative solutions and prioritizing actions that create holistic⁴ and long term value for our community (ecological, social and economic).

The Long View

9. We make decisions and act today with the long-term resilience of our community and ecosystems in mind, and prepare ourselves for changes to come.
10. We recognize our responsibility for the well being of future generations.

Leadership

11. We lead by example, learn from others, and foster leadership by community stakeholders.
12. We work to encourage and reward positive behaviour.

Collaboration

13. We work together to achieve our shared goals, across City departments, business sectors, public interests, institutional programs, neighbouring municipalities and other levels of government.

Engagement

14. We build trust by fostering internal and external relationships, partnerships, and networks.
15. We engage in and support education, building community awareness, responsibility and participation.
16. We employ and promote diverse methods of community engagement.

Evaluation and Improvement

17. We commit to continual improvement through adaptive management⁵ and building on the success of others.
18. We monitor and evaluate our performance toward our goals with targets and indicators⁶, and adjust our approach accordingly.
19. We clearly communicate our performance to stakeholders and the public.

May 23, 2013

¹ Benefits people obtain from ecosystems are known as "ecosystem services". These include provisioning services such as food and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational, and cultural benefits; and supporting services such as nutrient cycling that maintain the conditions for life on Earth. (Source: [Millennium Ecosystem Assessment](#))

² Intrinsic value is generally defined as the inherent worth of something, independent of its value to anyone or anything else. For example, the [United Nations World Charter for Nature \(1982\)](#) notes: "Every form of life is unique, warranting respect regardless of its worth to man."

³ Ecosystem-based management is an integrated approach to management that considers the entire ecosystem, including humans. The goal of ecosystem-based management is to maintain an ecosystem in a healthy, productive and resilient condition so that it can provide habitat as well as the services humans want and need. Ecosystem-based management differs from approaches that focus on a single species, sector, activity or concern; it considers the cumulative impacts of different sectors (Source: U.S. Commission on Ocean Policy and the Pew Oceans Commission, 2005).

⁴ Holistic means "relating to or concerned with wholes or with complete systems rather than with the analysis of, treatment of, or dissection into parts."

⁵ Adaptive Management can be defined as a systematic process for continually improving policies and practice by learning from outcomes of operational programs, and normally consists of a cyclical process of **Assessment, Design, Implementation, Monitoring, Evaluation, and Adjustment** (linking back again to Assessment... and so on).

⁶ Targets and indicators are themselves flexible, and are periodically re-evaluated, to adjust to new information.

APPENDIX B – SUMMARY OF QUICK STARTS ALREADY UNDERWAY

Table B1. Quick Starts with action currently underway

Priority*	Quick Start	Description of action in progress
1	13. Undertake a preliminary review and policy recommendations to support deployment of electric vehicles.	Future Council Report (in progress).
1	14. Review issues and possible opportunities to improve compliance, such as with requirements for review of development proposals by an energy professional.	Opportunities being considered as part of Energy Step Code review; further investigation proposed as part of Green Building Policy as outlined in this report.
1	15. Develop policy recommendations for encouraging higher performing buildings through the City's development application process, based upon provincial Step Code or other appropriate performance-based criteria.	Opportunities being considered as part of Energy Step Code review; further investigation proposed as part of Green Building Policy as outlined in this report.
1	23. Review upcoming civic building projects for opportunities to demonstrate energy-efficient passive design and net-zero-energy.	Opportunities being considered.
2	5. Review existing regulations for opportunities to reduce barriers to on-site rainwater management such as residential rain-gardens.	Regional approaches in development.
TBD	3. Undertake preliminary study (and mapping) to assess issue, recommend option(s) to protect streamside protection and enhancement areas.	Action recently taken in Still Creek corridor, achieved removal of private property incursions on City land, as part of implementation of previously approved Integrated Stormwater Management Plan.
TBD	4. Work with Metro Vancouver to support creating regional solutions for disposal of invasive plants and soil.	Underway through Regional Invasive Species Task Force.
TBD	18. Provide information on City website to promote local farms and vendors of locally produced food.	Big Bend Farm Tour guide and interactive web map updated in June 2017.

*see Appendix C

APPENDIX C – INITIAL PRIORITIZATION OF ESS/CEEP ‘BIG MOVE’ STRATEGIES

Table C1. Big Moves - Prioritization

Big Move Type	Goal	CEEP Strategy #	ESS Strategy	Priority	1. Time sensitive	2. Policy gap	3. Multiple (5+) ESS goals	4. Direct link to or shared with CEEP	4. Strong link to \$\$\$	5. Strong link to EDS	6. Other (see notes)
IN PROGRESS	Breathe		3.1. Reduce community greenhouse gas (GHG) emission rates, including in the areas of transportation, buildings, district energy and waste.	1	✓	✓	✓	✓	✓		
NEW	Breathe		3.2. Improve resilience to climate change effects by assessing risks and seeking and acting on opportunities to protect the community and ecosystems from anticipated impacts.	1	✓	✓	✓		✓		
CEEP NEW	Move	C2.5	5.6. Transition to more efficient (including zero-emission) vehicles and more efficient use of vehicles.	1	✓	✓		✓		✓	✓ ^a
IN PROGRESS	Build	C3.1	6.1. Meet updated energy performance building code requirements for new buildings.	1	✓	✓		✓		✓	✓ ^b
NEW	Build	C3.2	6.2. Improve building design construction to meet higher standards of environmental performance.	1	✓	✓	✓	✓		✓	
NEW	Manage	C5.1	10.3. Demonstrate leadership in sustainability through City facility and operations management by reducing energy and GHG emissions, conserving water, reducing and diverting waste and enhancing ecosystems.	1	✓	✓	✓	✓	✓	✓	
NEW	Green		1.1. Review and consider new policies, plans and programs to protect and enhance Burnaby's ecosystems .	2			✓		✓		✓ ^c
IN PROGRESS	Flow		2.1. Manage rainwater to restore and mimic natural flows and quality.	2			✓			✓	✓ ^c
IN PROGRESS	Move	C2.1	5.1. Develop and implement green transportation policies that create vibrant streets, reduce pollution and support healthier, more active lifestyles.	2	✓			✓	✓	✓	
IN PROGRESS	Nourish		8.1. Improve food system sustainability and security to support local food production, distribution and consumption.	2		✓			✓		✓ ^c
NEW	Manage	C5.2	10.4. Improve sustainability management through enhanced City business practices , system development, and leadership.	2		✓		✓	✓		✓ ^d
IN PROGRESS	Flow		2.4. Conserve water in the home, garden, workplace and community.	3		✓					
IN PROGRESS	Live	C1.2	4.3. Create accessible outstanding outdoor public spaces that encourage active transportation, socializing and interacting with nature.	3				✓	✓	✓	
IN PROGRESS	Conserve	C4.1.	9.3. Expand and improve waste reduction, recycling and food scraps programs.	3			✓	✓			
IN PROGRESS	Manage		10.2. Explore innovative ways to engage the public on environmental issues.	3			✓		✓		
FUTURE	Live		4.1. Create a more diverse, vibrant, resilient and resource efficient city from the neighbourhood level up.	3			✓		✓	✓	
FUTURE	Prosper		7.1. Work with the Burnaby Board of Trade, post-secondary institutions and other organizations to expand Burnaby's green economic sector and improve environmental performance of businesses .	3			✓			✓	

Table C1 Prioritization Criteria Details and Notes

1. **Time sensitive** – nature of issue is pressing and/or opportunities may be lost due to rapid pace of change.
2. **Policy gap** – policy in this area is limited or lacking.
3. **Multiple goals** – strongly supports at least 5 other ESS goals, as shown in Appendix G of ESS Report.
4. **Direct link to or shared with CEEP** – strategy is also a CEEP Big Move, or provides overall direction for CEEP.
5. **Strong link to SSS** (Social Sustainability Strategy), with inherent or direct link to content and direction of approved SSS.
6. **Strong link to EDS** (Economic Development Strategy), with inherent or direct link to content and direction of approved EDS.
7. **Other (Notes):**
 - a) Largest single opportunity for community GHG reduction identified in CEEP; current Council request to investigate; closely tied to 6.2 and Transportation Plan update (in progress).
 - b) Requires action alongside 6.2.
 - c) Supports 3.1 and 3.2
 - d) Supports 10.3

Table C2. Prioritization of Quick Starts, assigned by associated Big Move priority where applicable; highlighted items already underway (see Appendix B)

Big Move	ESS Strategy Reference	CEEP Strategy Reference	Quick Start - numbers from ESS/CEEP Framework	Priority (See Table C1)
IN PROGRESS	Breathe 3.1a	Build C3.4a	8. Provide information to encourage energy efficiency, for example a website/phone number with information about opportunities for energy efficiency upgrades and grants for homes (new build and renovations).	1
NEW	Breathe 3.2a		9. Define an approach for developing a climate change adaptation plan, including information and resource needs, process and timeline.	1
IN PROGRESS	Move 5.6a	Move C2.5a	13. Undertake a preliminary review and policy recommendations to support deployment of electric vehicles.	1
IN PROGRESS	Build 6.1b	Build C3.1a	14. Review issues and possible opportunities to improve compliance, such as with requirements for review of development proposals by an energy professional.	1
NEW	Build 6.2c	Build C3.2a	15. Develop policy recommendations for encouraging higher performing buildings through the City's development application process, based upon provincial Step Code or other appropriate performance-based criteria.	1
NEW	Manage 10.3b	Manage C5.1a	23. Review upcoming civic building projects for opportunities to demonstrate energy-efficient passive design and net-zero-energy.	1
NEW	Green 1.1a		1. Define scope/phasing and develop terms of reference for the Ecosystem Health Strategy, identify necessary resources and timeline.	2
IN PROGRESS	Flow 2.1a		5. Review existing regulations for opportunities to reduce barriers to on-site rainwater management such as residential rain-gardens.	2
IN PROGRESS	Move 5.1a	Move C2.1a	11. Review gaps in existing walking, cycling routes and develop recommendations and priorities.	2
IN PROGRESS	Nourish 8.1c		17. Define the scope and develop a terms of reference for the food system strategy, identifying budget/funding sources and timeline.	2
NEW	Manage 10.4b	Manage C5.2b	24. Provide an annual report via the Environment Committee of Council on progress and implementation of the ESS and CEEP.	2
IN PROGRESS	Flow 2.4c		7. Start a water metering policy review and develop water conservation options for consideration.	3
IN PROGRESS	Live 4.3b	Live C1.2	10. Review current opportunities to convert more streets for pedestrian use, including temporary car-free events (such as Hats-Off Day) and opportunities for permanent conversions.	3
IN PROGRESS	Conserve 9.3e	Conserve C4.1b	20. Conduct a policy and program scan of practices elsewhere and opportunities for Burnaby for localized neighbourhood drop-off.	3
IN PROGRESS	Manage 10.2a		22. Develop recommendations to provide more opportunities for dialogue about sustainability at public festivals and events.	3
N/A	Green 1.2c		2. Create a pollinator meadow pilot project on public land to test approaches for broader enhancement of habitat for pollinators and associated species, and public benefits.	TBD
N/A	Green 1.4c		3. Undertake preliminary study (and mapping) to assess issue, recommend option(s) to protect streamside protection and enhancement areas.	TBD
N/A	Green 1.6c		4. Work with Metro Vancouver to support creating regional solutions for disposal of invasive plants and soil.	TBD
N/A	Flow 2.2b		6. Create a high-profile demonstration project to showcase riparian-aquatic restoration, including community involvement and education.	TBD
N/A	Move 5.4e	Move C2.3a	12. Encourage active lifestyles by developing and promoting Parks, Recreation and Cultural Services programs to encourage walking and cycling for fitness and transportation.	TBD
N/A	Prosper 7.3a		16. Work with BBOT to create an online directory of local 'green' products and services.	TBD
N/A	Nourish 8.1d		18. Provide information on City website to promote local farms and vendors of locally produced food.	TBD
N/A	Nourish 8.3b		19. Partner with a non-profit community group to establish a publicly accessible community food garden and/or 'food forest' (food bearing trees and shrubs).	TBD
N/A	Conserve 9.4b		21. Consider options for eliminating bottled water sales at City facilities and encourage drinking tap water instead, such as by providing filling stations and at-cost reusable bottles.	TBD
N/A	Manage 10.6d		25. Undertake an opportunity analysis for enhanced support and coordination of streamkeeper groups by the City.	TBD

APPENDIX D – SUMMARY OF PROPOSED PRIORITY 1 ESS/CEEP STRATEGIES AND SUPPORTING SUGGESTED ACTIONS

Breathe ESS 3.1. Reduce community greenhouse gas (GHG) emission rates, including in the areas of transportation, buildings, district energy and waste.

	ESS
"Breathe" goal	A community resilient to climate change, with clean air and low carbon emissions.
Strategy No.	3.1 – Big Move
Strategy	Reduce community greenhouse gas (GHG) emission rates, including in the areas of transportation, buildings, district energy and waste.
Suggested Actions	a) Consider opportunities to reduce GHG emissions through community planning, transportation planning, development, and waste management including those identified in the Community Energy and Emissions Plan (currently in progress).
	b) Look for ways to demonstrate leadership by reducing City (corporate) GHG emissions (also see Manage, Strategy 10.3).
Quick Start	<i>8. Provide information to encourage energy efficiency, for example a website/phone number with information about opportunities for energy efficiency upgrades and grants for homes (new build and renovations).</i>

Breathe ESS 3.2. Improve resilience to climate change effects by assessing risks and seeking and acting on opportunities to protect the community and ecosystems from anticipated impacts.

	ESS
"Breathe" goal	A community resilient to climate change, with clean air and low carbon emissions.
Strategy No.	3.2 – Big Move
Strategy	Improve resilience to climate change effects by assessing risks and seeking and acting on opportunities to protect the community and ecosystems from anticipated impacts.
Suggested Actions	a) Consider developing a climate change adaptation strategy to improve the community's resilience.
	b) Assess risks including sea level rise, extreme rainfall, storm events and flooding, shifts in plant and animal habitats and agricultural zones, drinking water supply, heat emergencies, and to the urban heat island effect.
	c) Explore opportunities to reduce risks through land use, building design, using natural systems (for shoreline protection, rainwater management, cooling), landscape and urban forest planning, crop and pest management, water conservation, and emergency planning especially for vulnerable citizens (also see Green, Strategies 1.1 and 1.2).
Quick Start	<i>9. Define an approach for developing a climate change adaptation plan, including information and resource needs, process and timeline.</i>

Move ESS 5.6. / CEEP C2.5 Transition to more efficient (including zero-emission) vehicles and more efficient use of vehicles.

	ESS	CEEP
"Move" goal	A walkable, bike-able and transit-supported city that supports a healthy community and environment.	
Strategy No.	5.6.	C2.5 – Big Move
Strategy	Transition to more efficient (including zero-emission) vehicles and more efficient use of vehicles.	
Suggested Actions	a) Consider developing policy to strategically support and encourage the use of electric vehicles, including charging infrastructure in new developments and publicly accessible areas.	a) Consider developing policy to strategically support deployment of electric vehicles, including appropriate types and density of charging infrastructure in new development and publicly accessible areas, and consideration for public fast-charge station(s).
	b) Support and encourage car-sharing and bike-sharing.	c) Encourage and develop partnerships to expand car-sharing and consider bike-sharing opportunities in new development.
	c) Consider developing a parking policy to encourage fewer automobile trips, and prioritize more efficient and low-emissions vehicles like priority parking for carpool/vanpool, electric vehicles, and car-share vehicles.	b) Consider opportunities for demonstrating leadership by accelerating EV adoption by including EVs in corporate fleets, and providing public charging in municipal buildings and parking lots.
Quick Start	<i>13. Undertake a preliminary review and policy recommendations to support deployment of electric vehicles.</i>	

Build ESS 6.1. / CEEP C3.1 Meet updated energy performance building code requirements for new buildings.

	ESS	CEEP
"Build" goal	Buildings and infrastructure that have a positive impact on the environment.	
Strategy No.	6.1 – Big Move	C3.1 – Big Move
Strategy	Meet updated energy performance building code requirements for new buildings.	
Suggested Actions	a) Promote and encourage energy conservation for new buildings.	
	b) Explore working with designers, builders, energy professionals, industry and the province to identify opportunities to optimize building code compliance.	a) Explore ways to improve the skills and knowledge of professionals about energy efficiency requirements in the BC Building Code, for example supporting and promoting programs through BCIT, the Province, BC Hydro and APEGBC.
	c) Consider other CEEP recommended strategies for improving energy performance (e.g. energy audits/labeling; and biannual policy reviews).	
Quick Start	<i>14. Review issues and possible opportunities to improve compliance, such as with requirements for review of development proposals by an energy professional.</i>	

Build ESS 6.2. / CEEP C3.2 Improve building design construction to meet higher standards of environmental performance.

	ESS	CEEP
"Build" goal	Buildings and infrastructure that have a positive impact on the environment.	
Strategy No.	6.2 – Big Move	C3.2 – Big Move
Strategy	Improve building design and construction to meet higher standards of environmental performance.	
Suggested Actions	a) Promote and celebrate buildings that demonstrate leadership in conserving energy and water, reducing emissions and waste, and enhancing ecosystems.	
	b) Consider developing programs to further encourage and reward builders of highly energy efficient homes.	a) Consider policy approaches to encourage higher levels of energy efficiency than required in the BC Building Code, and reduced GHG emissions, in new larger (Part 3 BCBC) buildings, including: <ul style="list-style-type: none"> ● alignment with the provincial Building Act and Step Code. ● integration with existing City development application policy; ● incentives such as grants for innovative projects.
	c) Explore developing 'green building' policies and programs for new developments, exceeding minimum regulatory requirements, including energy and emissions reduction, water conservation, waste reduction, ecosystem enhancement and occupant health.	b) Consider policy approaches to encourage higher levels of energy efficiency than required in the BC Building Code, and reduced GHG emissions, in new smaller (Part 9 BCBC) buildings, including: <ul style="list-style-type: none"> ● alignment with the provincial Building Act and Step Code. ● integration with existing City development application policy; ● incentives such as grants for innovative projects.
Quick Start	<i>15. Develop policy recommendations for encouraging higher performing buildings through the City's development application process, based upon provincial Step Code or other appropriate performance-based criteria.</i>	

Manage ESS 10.3 / CEEP C5.1 Demonstrate leadership in sustainability through City facility and operations management by reducing energy and GHG emissions, conserving water, reducing and diverting waste and enhancing ecosystems.

	ESS	CEEP
"Manage" goal	Environmentally aware and engaged community working together to improve Burnaby's environmental performance.	
Strategy No.	10.3 – Big Move	C5.1 – Big Move
Strategy	Demonstrate leadership in sustainability through City facility and operations management by reducing energy and GHG emissions, conserving water, reducing and diverting waste and enhancing ecosystems.	
Suggested Actions	a) Pursue developing priorities and strategies for improving corporate sustainability.	
	b) Explore ways to implement further improvements in operational areas such as City procurement, vehicle fleet, staff commuting, food services, new and existing buildings and infrastructure, landscape design and management, server virtualization, and management of festivals and events.	a) Look for opportunities to incorporate leading green building practices and energy retrofits in City projects, and share learnings broadly.
	c) Consider financial, social and environmental impacts over their entire lifetime when deciding how to manage hard assets like buildings and infrastructure.	b) Explore developing a corporate energy and emissions plan.
Quick Start	<i>23. Review upcoming civic building projects for opportunities to demonstrate energy-efficient passive design and net-zero-energy.</i>	

APPENDIX E – FEDERATION OF CANADIAN MUNICIPALITIES (FCM) FUNDING

Overview of FCM Climate Funding Programs to Support City Projects and ESS/CEEP

FCM Program	Funding Amount	Potential Projects	ESS/CEEP Policy Area and Plan Reference
Energy: Climate Mitigation Studies	\$175,000 / 80%	Study/scan of opportunities for existing facility energy upgrades and retrofits	Corporate Sustainability / Green Building Manage 10.3/C5.1 (Big Move); Build 6.3/ C3.4
		Feasibility study of net-zero/passive design approaches, re-use of waste heat and other significant energy efficiency in new city facility/facilities.	Corporate Sustainability / Green Building Manage 10.3/C5.1 (Big Move); Quick Start #23; Build 6.2/C3.2 (Big Move)
		Back-up power supply at facilities and/or pump stations with renewable energy (solar + battery storage)	Corporate Sustainability Manage 10.3/C5.1 (Big Move); Build 6.6/C3.6
Transportation: Climate Mitigation	\$175,000 / 80%	Greening City Fleet (i.e. driving behaviour, vehicle matching, fuel shifting, EV's, etc.)	Corporate Sustainability Manage 10.3/C5.1 (Big Move); Move 5.6/C2.5 (Big Move)
Capital Project Funding	\$1M / 80%	Installation of publicly accessible EV charging in City facilities	Corporate Sustainability / EVs Move 5.6/C2.5 (Big Move)
		Implementation of other feasibility study outcomes	Corporate Sustainability Manage 10.3/C5.1 (Big Move); Build/Move
Climate Change Adaptation	\$175,000 / 80%	Asset vulnerability assessment	Climate Change Adaptation Breathe 3.2 (Big Move)
		Flood modeling / risk assessment	Climate Change Adaptation Breathe 3.2 (Big Move)
Staff for Climate mitigation	not yet announced (Fall 2017)	staff resources to support CEEP implementation	CEEP Implementation Manage 10.4 / C5.2 (Big Move)
Climate Change Adaptation	\$175,000 / 80%	Climate change adaptation plan	Climate Change Adaptation Breathe 3.2 (Big Move)
Greenhouse gas emission reduction and community energy plans funding	\$175,000 / 80%	Corporate sustainability (energy/GHG) strategy	Corporate Sustainability Manage 10.3 / C5.1 (Big Move)